



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/643,978	08/20/2003	Yoshitaka Aoki	241759US0	4978
22850	7590	03/21/2006	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			PENG, KUO LIANG	
			ART UNIT	PAPER NUMBER
			1712	
DATE MAILED: 03/21/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

CU

Office Action Summary	Application No. 10/643,978	Applicant(s) AOKI ET AL.	
	Examiner Kuo-Liang Peng	Art Unit 1712	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/9/05 RCE.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 and 13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 9, 2005 has been entered. Claims 1, 7, 11 and 13 are amended. Claim 12 is deleted. Now, Claims 1-11 and 13 are pending.

2. Claim objection(s) in the previous Office Action (Paper No. 091705) is/are removed.

3. Claim rejection(s) under 35 USC 112 in the previous Office Action (Paper No. 091705) is/are removed. It is noted that a typical silicone resin does have melting behavior. Examiner apologies for causing any confusion.

4. Claim rejection(s) under 35 USC 102 and 103 in the previous Office Action (Paper No. 091705) is/are moot.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1, 6-8, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fick (US 4 842 911) in view of Bunyan (US 6 054 198).

Fick discloses a heat conductive composite as described in page 2 of Paper No. 0305, which is incorporated herein by reference. Fick is silent on the use of a pre-cured silicone resin layer (upper layer 7A) that is capable of melting at the specific temperature range set forth in the instant claims. However, Fick teaches that the upper layer 7A should possess compliant ability to yield and **conform** to mating **surfaces** of an **associated electric device**. (col. 7, line 60 to col. 8, line 16) Furthermore, Bunyan teaches a thermal interface material which melts at a temperature range of a typical **operating temperature** of an **attached** heat generating electronic component to better **conform** to the interface **surfaces**. (col. 5, lines 20-35) The typical operating temperature of a heat generating electronic

Art Unit: 1712

component can be 60-80°C. (col. 5, line 64 to col. 6, line 15) In light of which, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize a pre-cured silicone resin layer capable of melting at the typical operating temperature of an attached heat generating electronic component, e.g., about 60-80°C. Obviously, the temperature range can be modified to be outside this typical range depending on the particular type of the heat generating electronic component. Should Applicants argue that Bunyan is a non-analogous art for the purpose of rejection due to the use of a non-silicone material for the thermal interface material, Applicants are referred to MPEP 2141.01(a) which states that a reference may be relied on as a basis for rejection of an Applicant's invention if it is "reasonably pertinent to the particular problem with which the inventor is concerned." A reasonably pertinent reference is further described as one which "even though it may be in a different field from that of the inventor's endeavor, it is one which, because of the matter with which it deals, logically would have commended itself to an inventor's attention in considering his problem." Therefore, although Bunyan is from different fields than that of the current application because of the use of a different material, it discloses that the thermal interface material is desirable to possess a certain **melting behavior**, which is especially pertinent to the invention at hand.

For Applicants' argument (Remarks, page 7, 2nd and 3rd paragraphs), it appears that Applicants still argue the improper layer. As mentioned in Paper No. 091705, Fick's heat curable layer (layer 7C) should correspond to Applicants' layer b), while Fick's pre-cured layer (layer 7A) should correspond to Applicants' layer a). Therefore, it appears that arguing the properties of layer 7C is irreverent. Furthermore, it appears that Applicants argue that since Ficks' silicone rubber is cured, it is incapable of melting at a temperature ranging from 40 to 100oC. However, Examiner takes Official notice that although a silicone polymer is **cured**, it still can have a melting behavior. See MPEP 2144.03.

7. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fick in view of Ahn (US 6 482 888) and further in view of Bunyan.

Fick in view of Ahn discloses a heat conductive composite as described in page 3, 1st paragraph of Paper No. 0305, which is incorporated herein by reference. Furthermore, in view of Bunyan, supra, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize a pre-cured silicone resin layer capable of melting at the typical operating temperature of an attached heat generating electronic component, e.g., about 60-80oC. Obviously, the

Art Unit: 1712

temperature range can be modified to be outside this typical range depending on the particular type of the heat generating electronic component.

8. Claims 4-5 and 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fick in view of Anabuki (US 6 506 828) and further in view of Bunyan.

Fick in view of Anabuki discloses a heat conductive composite as described in page 3, 2nd paragraph to page 4, 1st paragraph of Paper No. 0305, which is incorporated herein by reference. Furthermore, in view of Bunyan, supra, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to utilize a pre-cured silicone resin layer capable of melting at the typical operating temperature of an attached heat generating electronic component, e.g., about 60-80°C. Obviously, the temperature range can be modified to be outside this typical range depending on the particular type of the heat generating electronic component.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuo-Liang Peng whose telephone number is


Art Unit: 1712

(571) 272-1091. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached on (571) 272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

klp
March 17, 2006


Kuo-Liang Peng
Primary Examiner
Art Unit 1712